Analytical Laboratory

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Order Summary Report

Order Number: **J13050177**

Project Name: Flex Fuel Absorber 2

Customer Name(s): Bill Kennedy, Wayne Chapman

Customer Address: 3195 Pine Hall Rd
Mailcode: Belews Steam Station
Belews Creek, NC 28012

Lab Contact: Jason C Perkins Phone: 980-875-5348

Report Authorized By: (Signature) Digitally signed by jay perkins
DN: cn=jay perkins, o=Analytical Lab, ou, email=jay.perkins@duke-energy.com, c=US
Date: 2013.06.11 13:23:55 -04'00'
Jason C Perkins **Date:** 6/10/2013

Program Comments:

Please contact the Program Manager (Jason C Perkins) with any questions regarding this report.

Data Flags & Calculations:

Any analytical tests or individual analytes within a test flagged with a Qualifier indicate a deviation from the method quality system or quality control requirement. The qualifier description is found at the end of the Certificate of Analysis (sample results) under the qualifiers heading. All results are reported on a dry weight basis unless otherwise noted. Subcontracted data included on the Duke Certificate of Analysis is to be used as information only. Certified vendor results can be found in the subcontracted lab final report. Duke Energy Analytical Laboratory subcontracts analyses to other vendor laboratories that have been qualified by Duke Energy to perform these analyses except where noted.

Data Package:

This data package includes analytical results that are applicable only to the samples described in this narrative. An estimation of the uncertainty of measurement for the results in the report is available upon request. This report shall not be reproduced, except in full, without the written consent of the Analytical Laboratory. Please contact the Analytical laboratory with any questions. The order of individual sections within this report is as follows:

Job Summary Report, Sample Identification, Technical Validation of Data Package, Analytical Laboratory Certificate of Analysis, Analytical Laboratory QC Reports, Sub-contracted Laboratory Results, Customer Specific Data Sheets, Reports & Documentation, Customer Database Entries, Test Case Narratives, Chain of Custody (COC)

Certification:

The Analytical Laboratory holds the following State Certifications : North Carolina (DENR) Certificate #248, South Carolina (DHEC) Laboratory ID # 99005. Contact the Analytical Laboratory for definitive information about the certification status of specific methods.

Sample ID's & Descriptions:

Sample ID	Plant/Station	Collection Date and Time	Collected By	Sample Description
2013010513	BELEWS	08-May-13 6:00 AM	W. Chapman	MAKE UP WATER
2013010514	BELEWS	08-May-13 5:30 AM	W. Chapman	REAGENT FEED TANK LIQ
2013010515	BELEWS	08-May-13 5:30 AM	W. Chapman	REAGENT FEED TANK SOL
2013010516	BELEWS	08-May-13 5:35 AM	W. Chapman	2A ABS PRIM CLASS FEED LIQ
2013010517	BELEWS	08-May-13 5:35 AM	W. Chapman	2A ABS PRIM CLASS FEED SOL
2013010518	BELEWS	08-May-13 5:45 AM	W. Chapman	2B ABS PRIM CLASS FEED LIQ
2013010519	BELEWS	08-May-13 5:45 AM	W. Chapman	2B ABS PRIM CLASS FEED SOL
2013010520	BELEWS	08-May-13 5:00 AM	W. Chapman	GYPSUM CAKE BELT
2013010521	BELEWS	08-May-13 5:20 AM	W. Chapman	2A ABS PURGE LIQUIDS
2013010522	BELEWS	08-May-13 5:20 AM	W. Chapman	2A ABS PURGE SOLIDS

10 Total Samples

Technical Validation Review

Checklist:

COC and .pdf report are in agreement with sample totals and analyses (compliance programs and procedures).	☑ Yes	☐ No
All Results are less than the laboratory reporting limits.	☐ Yes	☑ No
All laboratory QA/QC requirements are acceptable.	☑ Yes	☐ No

Report Sections Included:

- ☑ Job Summary Report
- ☑ Sample Identification
- ☑ Technical Validation of Data Package
- ☑ Analytical Laboratory Certificate of Analysis
- ☐ Analytical Laboratory QC Report
- ☑ Sub-contracted Laboratory Results
- ☐ Customer Specific Data Sheets, Reports, & Documentation
- ☐ Customer Database Entries
- ☑ Chain of Custody
- ☑ Electronic Data Deliverable (EDD) Sent Separately

Reviewed By: DBA Account Date: 6/10/2013

Certificate of Laboratory Analysis

Order # J13050177

Site: MAKE UP WATER
Collection Date: 08-May-13 6:00 AM

Sample #: 2013010513
Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
ALKALINITY - (Analysis Performed by Prism Labs)								
Vendor Parameter	**Complete**					Vendor Method		V_PRISM
INORGANIC IONS BY IC								
Bromide	**< 0.1**	mg/L		0.1	1	EPA 300.0	05/13/2013 20:12	JAHERMA
Chloride	**8.1**	mg/L		0.1	1	EPA 300.0	05/13/2013 20:12	JAHERMA
Fluoride	**0.41**	mg/L		0.1	1	EPA 300.0	05/13/2013 20:12	JAHERMA
Sulfate	**13**	mg/L		1	10	EPA 300.0	05/13/2013 20:12	JAHERMA
Mercury by EPA 200.8 - (Analysis Performed by Applied Speciation and Consulting, LLC)								
Vendor Parameter	**Complete**	ug/l				Vendor Method		V_AS&C
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**0.077**	mg/L		0.05	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Calcium (Ca)	**10.0**	mg/L		0.01	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Iron (Fe)	**0.057**	mg/L		0.01	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Magnesium (Mg)	**3.54**	mg/L		0.005	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Manganese (Mn)	**0.011**	mg/L		0.005	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Potassium (K)	**3.56**	mg/L		0.1	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Sodium (Na)	**6.67**	mg/L		0.05	1	EPA 200.7	05/17/2013 12:22	DJSULL1
Strontium (Sr)	**0.073**	mg/L		0.005	1	EPA 200.7	05/17/2013 12:22	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Aluminum (Al)	**40.1**	ug/L		2	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Antimony (Sb)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Arsenic (As)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Beryllium (Be)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Cadmium (Cd)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Chromium (Cr)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Cobalt (Co)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Lead (Pb)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Nickel (Ni)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
Selenium (Se)	**4.01**	ug/L		1	1	EPA 200.8	06/06/2013 09:55	DJSULL1
TOTAL DISSOLVED SOLIDS								
TDS	**86**	mg/L		25	1	SM2540C	05/14/2013 16:45	JDTALLE
TOTAL SUSPENDED SOLIDS								
TSS	**< 5**	mg/L		5	1	SM2540D	05/15/2013 13:27	SWILLI3

Certificate of Laboratory Analysis

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Order # J13050177

Site: REAGENT FEED TANK LIQ
Collection Date: 08-May-13 5:30 AM

Sample #: 2013010514
Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC								
Bromide	**0.21**	mg/L		0.1	1	EPA 300.0	05/13/2013 20:31	JAHERMA
Chloride	**22**	mg/L		1	10	EPA 300.0	05/13/2013 20:31	JAHERMA
Fluoride	**0.30**	mg/L		0.1	1	EPA 300.0	05/13/2013 20:31	JAHERMA
Sulfate	**43**	mg/L		1	10	EPA 300.0	05/13/2013 20:31	JAHERMA
MERCURY (COLD VAPOR) IN WATER								
Mercury (Hg)	**< 2.5**	ug/L		2.5	50	EPA 245.1	05/16/2013 14:16	AGIBBS
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**< 0.5**	mg/L		0.5	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Calcium (Ca)	**32.5**	mg/L		0.1	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Iron (Fe)	**< 0.1**	mg/L		0.1	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Magnesium (Mg)	**4.87**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Manganese (Mn)	**< 0.05**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Potassium (K)	**7.47**	mg/L		1	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Sodium (Na)	**13.6**	mg/L		0.5	10	EPA 200.7	05/17/2013 12:26	DJSULL1
Strontium (Sr)	**0.269**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:26	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Aluminum (Al)	**35.0**	ug/L		2	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Antimony (Sb)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Arsenic (As)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Beryllium (Be)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Cadmium (Cd)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Chromium (Cr)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Cobalt (Co)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Lead (Pb)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Nickel (Ni)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1
Selenium (Se)	**< 1**	ug/L		1	1	EPA 200.8	06/06/2013 09:58	DJSULL1

Site: REAGENT FEED TANK SOL
Collection Date: 08-May-13 5:30 AM

Sample #: 2013010515
Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
Dionex Analysis of Gypsum Leachate								
Bromide	**< 10**	mg/kg		10	1	CS-3612 M-2	05/16/2013 11:22	BGN9034
Chloride	**< 10**	mg/kg		10	1	CS-3612 M-2	05/16/2013 11:22	BGN9034
Fluoride	**< 10**	mg/kg		10	1	CS-3612 M-2	05/16/2013 11:22	BGN9034
Sulfate	**95**	mg/kg		10	1	CS-3612 M-2	05/16/2013 11:22	BGN9034

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Order # J13050177

Site: REAGENT FEED TANK SOL **Sample #: 2013010515**

Collection Date: 08-May-13 5:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL METALS BY ICP								
Aluminum (Al)	**691**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Antimony (Sb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:08	MHH7131
Arsenic (As)	**< 13**	mg/Kg		13	10	SW 6010C	05/16/2013 10:08	MHH7131
Beryllium (Be)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Boron (B)	**< 33**	mg/Kg		33	10	SW 6010C	05/16/2013 10:08	MHH7131
Cadmium (Cd)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Calcium (Ca)	**377000**	mg/Kg		13	20	SW 6010C	05/16/2013 10:08	MHH7131
Chromium (Cr)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Cobalt (Co)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Copper (Cu)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Iron (Fe)	**1220**	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:08	MHH7131
Lead (Pb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:08	MHH7131
Magnesium (Mg)	**3920**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Manganese (Mn)	**43.2**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Nickel (Ni)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
Potassium (K)	**286**	mg/Kg		67	10	SW 6010C	05/16/2013 10:08	MHH7131
Selenium (Se)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:08	MHH7131
Strontium (Sr)	**235**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:08	MHH7131
METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)								
Vendor Parameter	**Complete**					Vendor Method		V_SGS

Site: 2A ABS PRIM CLASS FEED LIQ **Sample #: 2013010516**

Collection Date: 08-May-13 5:35 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
ALKALINITY - (Analysis Performed by Prism Labs)								
Vendor Parameter	**Complete**					Vendor Method		V_PRISM
INORGANIC IONS BY IC								
Bromide	**91**	mg/L		10	100	EPA 300.0	05/13/2013 19:16	JAHERMA
Chloride	**6600**	mg/L		100	1000	EPA 300.0	05/13/2013 19:16	JAHERMA
Fluoride	**13**	mg/L		10	100	EPA 300.0	05/13/2013 19:16	JAHERMA
Sulfate	**1300**	mg/L		100	1000	EPA 300.0	05/13/2013 19:16	JAHERMA
MERCURY (COLD VAPOR) IN WATER								
Mercury (Hg)	**< 2.5**	ug/L		2.5	50	EPA 245.1	05/16/2013 14:18	AGIBBS

Certificate of Laboratory Analysis

Order # J13050177

Site: 2A ABS PRIM CLASS FEED LIQ **Sample #: 2013010516**

Collection Date: 08-May-13 5:35 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**177**	mg/L		0.5	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Calcium (Ca)	**3120**	mg/L		0.1	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Iron (Fe)	**< 0.1**	mg/L		0.1	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Magnesium (Mg)	**764**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Manganese (Mn)	**8.82**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Potassium (K)	**20.4**	mg/L		1	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Sodium (Na)	**39.7**	mg/L		0.5	10	EPA 200.7	05/17/2013 12:30	DJSULL1
Strontium (Sr)	**10.3**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:30	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Aluminum (Al)	**109**	ug/L		20	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Antimony (Sb)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Arsenic (As)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Beryllium (Be)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Cadmium (Cd)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Chromium (Cr)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Cobalt (Co)	**40.1**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Lead (Pb)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Nickel (Ni)	**124**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
Selenium (Se)	**497**	ug/L		10	10	EPA 200.8	06/06/2013 10:01	DJSULL1
SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_AS&C
TOTAL DISSOLVED SOLIDS								
TDS	**16000**	mg/L		25	1	SM2540C	05/14/2013 16:45	JDTALLE

Site: 2A ABS PRIM CLASS FEED SOL **Sample #: 2013010517**

Collection Date: 08-May-13 5:35 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
Dionex Analysis of Gypsum Leachate								
Bromide	**< 200**	mg/kg		200	20	CS-3612 M-2	05/16/2013 14:50	BGN9034
Chloride	**280**	mg/kg		200	20	CS-3612 M-2	05/16/2013 14:50	BGN9034
Fluoride	**250**	mg/kg		200	20	CS-3612 M-2	05/16/2013 14:50	BGN9034
Sulfate	**140000**	mg/kg		2000	200	CS-3612 M-2	05/16/2013 14:50	BGN9034

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Order # J13050177

Site: 2A ABS PRIM CLASS FEED SOL **Sample #: 2013010517**

Collection Date: 08-May-13 5:35 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL METALS BY ICP								
Aluminum (Al)	**919**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Antimony (Sb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:12	MHH7131
Arsenic (As)	**< 13**	mg/Kg		13	10	SW 6010C	05/16/2013 10:12	MHH7131
Beryllium (Be)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Boron (B)	**< 33**	mg/Kg		33	10	SW 6010C	05/16/2013 10:12	MHH7131
Cadmium (Cd)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Calcium (Ca)	**157000**	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:12	MHH7131
Chromium (Cr)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Cobalt (Co)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Copper (Cu)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Iron (Fe)	**912**	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:12	MHH7131
Lead (Pb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:12	MHH7131
Magnesium (Mg)	**728**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Manganese (Mn)	**5.31**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Nickel (Ni)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
Potassium (K)	**368**	mg/Kg		67	10	SW 6010C	05/16/2013 10:12	MHH7131
Selenium (Se)	**20.7**	mg/Kg		20	10	SW 6010C	05/16/2013 10:12	MHH7131
Strontium (Sr)	**84.1**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:12	MHH7131
METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)								
Vendor Parameter	**Complete**					Vendor Method		V_SGS

Site: 2B ABS PRIM CLASS FEED LIQ **Sample #: 2013010518**

Collection Date: 08-May-13 5:45 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
ALKALINITY - (Analysis Performed by Prism Labs)								
Vendor Parameter	**Complete**					Vendor Method		V_PRISM
INORGANIC IONS BY IC								
Bromide	**83**	mg/L		10	100	EPA 300.0	05/13/2013 19:35	JAHERMA
Chloride	**6100**	mg/L		100	1000	EPA 300.0	05/13/2013 19:35	JAHERMA
Fluoride	**14**	mg/L		10	100	EPA 300.0	05/13/2013 19:35	JAHERMA
Sulfate	**1300**	mg/L		100	1000	EPA 300.0	05/13/2013 19:35	JAHERMA
MERCURY (COLD VAPOR) IN WATER								
Mercury (Hg)	**< 2.5**	ug/L		2.5	50	EPA 245.1	05/16/2013 14:21	AGIBBS

Certificate of Laboratory Analysis

Order # J13050177

Site: 2B ABS PRIM CLASS FEED LIQ **Sample #: 2013010518**

Collection Date: 08-May-13 5:45 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**163**	mg/L		0.5	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Calcium (Ca)	**2900**	mg/L		0.1	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Iron (Fe)	**< 0.1**	mg/L		0.1	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Magnesium (Mg)	**717**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Manganese (Mn)	**8.18**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Potassium (K)	**19.7**	mg/L		1	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Sodium (Na)	**37.8**	mg/L		0.5	10	EPA 200.7	05/17/2013 12:34	DJSULL1
Strontium (Sr)	**9.69**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:34	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Aluminum (Al)	**261**	ug/L		20	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Antimony (Sb)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Arsenic (As)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Beryllium (Be)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Cadmium (Cd)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Chromium (Cr)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Cobalt (Co)	**40.5**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Lead (Pb)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Nickel (Ni)	**134**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
Selenium (Se)	**410**	ug/L		10	10	EPA 200.8	06/06/2013 10:05	DJSULL1
SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_AS&C
TOTAL DISSOLVED SOLIDS								
TDS	**15000**	mg/L		25	1	SM2540C	05/14/2013 16:45	JDTALLE

Site: 2B ABS PRIM CLASS FEED SOL **Sample #: 2013010519**

Collection Date: 08-May-13 5:45 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
Dionex Analysis of Gypsum Leachate								
Bromide	**< 200**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:09	BGN9034
Chloride	**420**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:09	BGN9034
Fluoride	**380**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:09	BGN9034
Sulfate	**140000**	mg/kg		2000	200	CS-3612 M-2	05/16/2013 15:09	BGN9034

Certificate of Laboratory Analysis

Order # J13050177

Site: 2B ABS PRIM CLASS FEED SOL **Sample #: 2013010519**

Collection Date: 08-May-13 5:45 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL METALS BY ICP								
Aluminum (Al)	**1010**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Antimony (Sb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:16	MHH7131
Arsenic (As)	**< 13**	mg/Kg		13	10	SW 6010C	05/16/2013 10:16	MHH7131
Beryllium (Be)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Boron (B)	**< 33**	mg/Kg		33	10	SW 6010C	05/16/2013 10:16	MHH7131
Cadmium (Cd)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Calcium (Ca)	**157000**	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:16	MHH7131
Chromium (Cr)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Cobalt (Co)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Copper (Cu)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Iron (Fe)	**984**	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:16	MHH7131
Lead (Pb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:16	MHH7131
Magnesium (Mg)	**702**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Manganese (Mn)	**5.63**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Nickel (Ni)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
Potassium (K)	**410**	mg/Kg		67	10	SW 6010C	05/16/2013 10:16	MHH7131
Selenium (Se)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:16	MHH7131
Strontium (Sr)	**84.2**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:16	MHH7131
METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)								
Vendor Parameter	**Complete**					Vendor Method		V_SGS

Site: GYPSUM CAKE BELT **Sample #: 2013010520**

Collection Date: 08-May-13 5:00 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
Dionex Analysis of Gypsum Leachate								
Bromide	**< 200**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:28	BGN9034
Chloride	**< 200**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:28	BGN9034
Fluoride	**200**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:28	BGN9034
Sulfate	**140000**	mg/kg		2000	200	CS-3612 M-2	05/16/2013 15:28	BGN9034

Certificate of Laboratory Analysis

Order # J13050177

Site: GYPSUM CAKE BELT **Sample #: 2013010520**

Collection Date: 08-May-13 5:00 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL METALS BY ICP								
Aluminum (Al)	**507**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Antimony (Sb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:20	MHH7131
Arsenic (As)	**< 13**	mg/Kg		13	10	SW 6010C	05/16/2013 10:20	MHH7131
Beryllium (Be)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Boron (B)	**< 33**	mg/Kg		33	10	SW 6010C	05/16/2013 10:20	MHH7131
Cadmium (Cd)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Calcium (Ca)	**141000**	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:20	MHH7131
Chromium (Cr)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Cobalt (Co)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Copper (Cu)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Iron (Fe)	**526**	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:20	MHH7131
Lead (Pb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:20	MHH7131
Magnesium (Mg)	**480**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Manganese (Mn)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Nickel (Ni)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
Potassium (K)	**192**	mg/Kg		67	10	SW 6010C	05/16/2013 10:20	MHH7131
Selenium (Se)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:20	MHH7131
Strontium (Sr)	**75.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:20	MHH7131
METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)								
Vendor Parameter	**Complete**					Vendor Method		V_SGS

Site: 2A ABS PURGE LIQUIDS **Sample #: 2013010521**

Collection Date: 08-May-13 5:20 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
ALKALINITY - (Analysis Performed by Prism Labs)								
Vendor Parameter	**Complete**					Vendor Method		V_PRISM
INORGANIC IONS BY IC								
Bromide	**89**	mg/L		10	100	EPA 300.0	05/13/2013 19:54	JAHERMA
Chloride	**6400**	mg/L		100	1000	EPA 300.0	05/13/2013 19:54	JAHERMA
Fluoride	**11**	mg/L		10	100	EPA 300.0	05/13/2013 19:54	JAHERMA
Sulfate	**1300**	mg/L		100	1000	EPA 300.0	05/13/2013 19:54	JAHERMA
MERCURY (COLD VAPOR) IN WATER								
Mercury (Hg)	**< 2.5**	ug/L		2.5	50	EPA 245.1	05/16/2013 14:23	AGIBBS

Certificate of Laboratory Analysis

Order # J13050177

Site: 2A ABS PURGE LIQUIDS **Sample #: 2013010521**

Collection Date: 08-May-13 5:20 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**175**	mg/L		0.5	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Calcium (Ca)	**2910**	mg/L		0.1	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Iron (Fe)	**< 0.1**	mg/L		0.1	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Magnesium (Mg)	**761**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Manganese (Mn)	**8.60**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Potassium (K)	**20.1**	mg/L		1	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Sodium (Na)	**39.3**	mg/L		0.5	10	EPA 200.7	05/17/2013 12:38	DJSULL1
Strontium (Sr)	**9.87**	mg/L		0.05	10	EPA 200.7	05/17/2013 12:38	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Aluminum (Al)	**24.6**	ug/L		20	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Antimony (Sb)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Arsenic (As)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Beryllium (Be)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Cadmium (Cd)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Chromium (Cr)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Cobalt (Co)	**39.3**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Lead (Pb)	**< 10**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Nickel (Ni)	**123**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
Selenium (Se)	**235**	ug/L		10	10	EPA 200.8	06/06/2013 10:08	DJSULL1
SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_AS&C
TOTAL DISSOLVED SOLIDS								
TDS	**16000**	mg/L		25	1	SM2540C	05/14/2013 16:45	JDTALLE
TOTAL SUSPENDED SOLIDS								
TSS	**4000**	mg/L		71.4	1	SM2540D	05/15/2013 13:27	SWILLI3

Site: 2A ABS PURGE SOLIDS **Sample #: 2013010522**

Collection Date: 08-May-13 5:20 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
Dionex Analysis of Gypsum Leachate								
Bromide	**< 200**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:47	BGN9034
Chloride	**1900**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:47	BGN9034
Fluoride	**450**	mg/kg		200	20	CS-3612 M-2	05/16/2013 15:47	BGN9034
Sulfate	**140000**	mg/kg		2000	200	CS-3612 M-2	05/16/2013 15:47	BGN9034

Certificate of Laboratory Analysis

Order # J13050177

Site: 2A ABS PURGE SOLIDS **Sample #: 2013010522**

Collection Date: 08-May-13 5:20 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL METALS BY ICP								
Aluminum (Al)	**21000**	mg/Kg		6.7	20	SW 6010C	05/16/2013 10:24	MHH7131
Antimony (Sb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:24	MHH7131
Arsenic (As)	**27.8**	mg/Kg		13	10	SW 6010C	05/16/2013 10:24	MHH7131
Beryllium (Be)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Boron (B)	**164**	mg/Kg		33	10	SW 6010C	05/16/2013 10:24	MHH7131
Cadmium (Cd)	**< 3.3**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Calcium (Ca)	**156000**	mg/Kg		6.7	10	SW 6010C	05/16/2013 10:24	MHH7131
Chromium (Cr)	**51.7**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Cobalt (Co)	**5.55**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Copper (Cu)	**17.0**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Iron (Fe)	**20100**	mg/Kg		13	20	SW 6010C	05/16/2013 10:24	MHH7131
Lead (Pb)	**< 20**	mg/Kg		20	10	SW 6010C	05/16/2013 10:24	MHH7131
Magnesium (Mg)	**6980**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Manganese (Mn)	**109**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Nickel (Ni)	**18.8**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
Potassium (K)	**9020**	mg/Kg		67	10	SW 6010C	05/16/2013 10:24	MHH7131
Selenium (Se)	**510**	mg/Kg		20	10	SW 6010C	05/16/2013 10:24	MHH7131
Strontium (Sr)	**109**	mg/Kg		3.3	10	SW 6010C	05/16/2013 10:24	MHH7131
METALS ANALYSIS BY VENDOR LAB - (Analysis Performed by SGS North America Inc.)								
Vendor Parameter	**Complete**					Vendor Method		V_SGS

SGS

Analysis Report

May 28, 2013

Duke Energy
13339 Hagers Ferry Road
Bldg 7405 // MG03A2
Huntersville, NC 28078
USA

Client Sample ID:	2013010515	**Date Sampled :**	05/08/2013
Date Received:	05/17/2013	**P. O. # :**	148676
Matrix:	Unknown	**Project Name/# :**	Belews Creek (Flex Fuel Absorber 2)
		Sample ID :	LIMS #13050177
		Sample ID :	Reagent Feed Tank Solids
		Time Sampled :	0530

SGS Minerals Sample ID: 072-68523-001

Tests	Result	Unit	Method
Acid Insoluble Residue	0.39	%	ASTM C 471
Mercury, Total	<0.02	mg/Kg	SW7473

Method Reference(s):
"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

Somer Rodriguez, Denver Laboratory

SGS North America Inc. | Minerals Services Division
4665 Paris St Suite B-200 Denver CO 80239
t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

SGS

Analysis Report

May 28, 2013

Duke Energy
13339 Hagers Ferry Road
Bldg 7405 // MG03A2
Huntersville, NC 28078
USA

Client Sample ID:	2013010517	**Date Sampled :**	05/08/2013
Date Received:	05/17/2013	**P. O. # :**	148676
Matrix:	Unknown	**Project Name/# :**	Belews Creek (Flex Fuel Absorber 2)
		Sample ID :	2A Abs. Primary Class Feed Solids
		Sample ID :	LIMS # J13050177
		Time Sampled :	0535

SGS Minerals Sample ID: 072-68523-002

Tests	Result	Unit	Method
Acid Insoluble Residue	1.68	%	ASTM C 471
Mercury, Total	1	mg/Kg	SW7473

Method Reference(s):
"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

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SGS

Analysis Report

May 28, 2013

Duke Energy
13339 Hagers Ferry Road
Bldg 7405 // MG03A2
Huntersville, NC 28078
USA

Client Sample ID:	2013010519	**Date Sampled :**	05/08/2013
Date Received:	05/17/2013	**P. O. # :**	148676
Matrix:	Unknown	**Project Name/# :**	Belews Creek (Flex Fuel Absorber 2)
		Sample ID :	2B Abs. Primary Class Feed--Solids
		Sample ID :	LIMS # J13050177
		Time Sampled :	0545

SGS Minerals Sample ID: 072-68523-003

Tests	Result	Unit	Method
Acid Insoluble Residue	1.11	%	ASTM C 471
Mercury, Total	1	mg/Kg	SW7473

Method Reference(s):
"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

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Analysis Report

May 28, 2013

Duke Energy
13339 Hagers Ferry Road
Bldg 7405 // MG03A2
Huntersville, NC 28078
USA

Client Sample ID:	2013010520	**Date Sampled :**	05/08/2013
Date Received:	05/17/2013	**P. O. # :**	148676
Matrix:	Unknown	**Project Name/# :**	Belews Creek (Flex Fuel Absorber 2)
		Sample ID :	Gypsum Cake--Belt
		Sample ID :	LIMS # J13050177
		Time Sampled :	0500

SGS Minerals Sample ID: 072-68523-004

Tests	Result	Unit	Method
Acid Insoluble Residue	1.00	%	ASTM C 471
Mercury, Total	0.71	mg/Kg	SW7473

Method Reference(s):
"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

Somer Rodriguez, Denver Laboratory

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4665 Paris St Suite B-200 Denver CO 80239
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SGS

Analysis Report

May 28, 2013

Duke Energy
13339 Hagers Ferry Road
Bldg 7405 // MG03A2
Huntersville, NC 28078
USA

Client Sample ID:	2013010522	**Date Sampled :**	05/08/2013
Date Received:	05/17/2013	**P. O. # :**	148676
Matrix:	Unknown	**Project Name/# :**	Belews Creek (Flex Fuel Absorber 2)
		Sample ID :	#1 Abs. Purge Solids
		Sample ID :	LIMS # J13050177
		Time Sampled :	0520

SGS Minerals Sample ID: 072-68523-005

Tests	Result	Unit	Method
Acid Insoluble Residue	0.73	%	ASTM C 471
Mercury, Total	35	mg/Kg	SW7473

Method Reference(s):
"Test Methods for Evaluating Solid Waste", U.S. Environmental Protection Agency, SW-846, 3rd Edition November, 1986

Somer Rodriguez, Denver Laboratory

SGS North America Inc. | Minerals Services Division
4665 Paris St Suite B-200 Denver CO 80239
t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

68523

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

DUKE ENERGY

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7406)
13339 Hagers Ferry Rd
Huntersville, N.C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

LIMS # J3050177 | Sample Class ASHBAS | Samples Originating From NC SC | Logged By RA | Date & Time 5/9/13 | SAMPLE PROGRAM NPDES Drinking Water ___ Waste ___ | Cooler Temp (C) 1.7

PRISM
PO#144725

SGS – Denver
PO# 148676

AS&C
PO#133241

1)Project Name: Belews Creek (Flex Fuel Absorber 2) | 2)Phone No:
2) Client: Wayne Chapman, Bill Kennedy | 4)Fax No:
5)Business Unit: | 6)Process: BMCEFGD | Mail Code:
8)Oper. Unit: BC00 | 9)Res. Type: | 10)Activity ID:

Customer must Complete appropriate non-shaded areas.

Customer to complete appropriate columns to right

LAB USE ONLY 11)Lab ID	Se Speciation Bottle ID	13)Sample Description or ID	Date	Time	Signature	17)Comp.	18)Grab	15)Analyses Required: Metals* and Hg 245.1	Anions**	Solids =% inerts, Hg-metals_ven, (V_SGS)	TDS	Se Specifcation (ASC)	Hg 200.8 - ((V-ASC)					
								3	4	4	4	4						
2013010513		Make Up Water	5-8-13	0600	W. CHAPMAN			1*	1		1		1					
2013010514		Reagent Feed Tank " " -- Liquid	5-8-13	0530	W. CHAPMAN			1	1									
2013010515		Reagent Feed Tank " " -- Solids	5-8-13	0530	W. CHAPMAN			1*	1*	1								
2013010516		2A Abs. Primary Class Feed -- Liquid	5-8-13	0535	W. CHAPMAN			1	1		1	1						
2013010517		2A Abs. Primary Class Feed -- Solids	5-8-13	0535	W. CHAPMAN			1*	1*	1								
2013010518		2B Abs. Primary Class Feed -- Liquid	5-8-13	0545	W. CHAPMAN			1	1		1	1						
2013010519		2B Abs. Primary Class Feed -- Solids	5-8-13	0545	W. CHAPMAN			1*	1*	1								
2013010520		Gypsum Cake -- " " Belt	5-8-13	0550	W. CHAPMAN			1*	1*	1								
2013010521		#1 Abs. Purge-- Liquid	5-8-13	0520	W. CHAPMAN			1	1		1	1	1	1				5
2013010522		#1 Abs. Purge -- Solids	5-8-13	0520	W. CHAPMAN			1*	1*	1							2 Bags	3

Customer to sign & date below - fill out from left to right.

1) Relinquished By	Date/Time 5-8-13 1430	2) Accepted By: COURIER	Date/Time 5/8/13
3) Relinquished By: COURIER	Date/Time 5/9/13 0930	4) Accepted By:	Date/Time 5/9/13 0930
5)Relinquished By	Date/Time	6)Accepted By:	Date/Time
7)Relinquished By	Date/Time 5/9/13 1300	8)Accepted By: R Mace	Date/Time 5/11/13
9)Seal/Locked By	Date/Time 5/9/13 1300	10) Seal/Lock Opened By	Date/Time
11)Seal/Locked By	Date/Time	12)Seal/Lock Opened By	Date/Time

Comments

Metals* Water (ICP/TRM=B, Ca, Fe, Mg, Mn ,K, Na, Sr IMS/TRM=Sb, Al, As, Be, Cd, Cr, Co, Ni, Pb, Se, and 1* No Hg 245.1)
Anions** Water (IC=Br, Cl, F, SO4) 1*-solids ICPSED=Al,Sb,As,Be,B,Ca,Cd,Cr,Cu,Co,Fe,K,Mg,Mn,Ni,Pb,Se,Sr)
1* (% Solgypsum and Dion_GYP for Br, Cl, F, SO4

Customer, IMPORTANT! Please indicate desired turnaround.

22)Requested Turnaround

21 Days ____x____9(in-house)
*7 Days _____
*48 Hr _____
Vendor lab 13 Days___X___
5-22-13

072-68523-001
2013010515
Duke Energy Huntersville
Due 05/28/2013 Rec 05/17/2013
Al,Hg

072-68523-002
2013010517
Duke Energy Huntersville
Due 05/28/2013 Rec 05/17/2013
Al Hg

072-68523-003
2013010519
Duke Energy Huntersville
Due 05/28/2013 Rec 05/17/2013
Al Hg

072-68523-004
2013010520
Duke Energy Huntersville
Due 05/28/2013 Rec 05/17/2013
Al Hg

072-68523-005
2013010522
Duke Energy Huntersville
Due 05/28/2013 Rec 05/17/2013
Al Hg

PRISM LABORATORIES, INC.
Full-Service Analytical & Environmental Solutions

NC Certification No. 402
SC Certification No. 99012
NC Drinking Water Cert No. 37735
VA Certification No. 460211
DoD ELAP Certification No. L2307

Case Narrative

05/20/2013

Duke Energy Corporation
Jay Perkins
13339 Hagers Ferry Road
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2) Absorber 2
Project No.: J13050177
Lab Submittal Date: 05/09/2013
Prism Work Order: 3050229

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

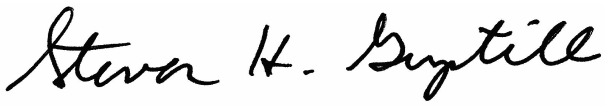
Please call if you have any questions relating to this analytical report.

Respectfully,

PRISM LABORATORIES, INC.

Angela D. Overcash

VP Laboratory Services



Reviewed By Steven H. Guptill For Angela D. Overcash

Project Manager

Data Qualifiers Key Reference:

HT	Sample received and analyzed outside of the hold time.
BRL	Below Reporting Limit
MDL	Method Detection Limit
RPD	Relative Percent Difference
*	Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

Sample Receipt Summary

05/20/2013

Prism Work Order: 3050229

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
2013010513/Make Up Water	3050229-01	Water	05/08/13	05/09/13
2013010516/2A Abs. Primary Class Fee	3050229-02	Water	05/08/13	05/09/13
2013010518/2B Abs. Primary Class Fee	3050229-03	Water	05/08/13	05/09/13
2013010521/#1 Abs. Purge -- Liquid	3050229-04	Water	05/08/13	05/09/13

Samples received in good condition at 4.1 degrees C unless otherwise noted.

449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543
Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

Duke Energy Corporation
Attn: Jay Perkins
13339 Hagers Ferry Road
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)
Absorber 2
Project No.: J13050177
Sample Matrix: Water

Client Sample ID: 2013010513/Make Up Water
Prism Sample ID: 3050229-01
Prism Work Order: 3050229
Time Collected: 05/08/13 06:00
Time Submitted: 05/09/13 14:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
pH	**7.2 HT**	**pH Units**			**1**	***SM4500-H B**	**5/10/13 15:30**	**JAB**	**P3E0210**
Total Alkalinity	**35**	**mg/L**	**5.0**	**0.59**	**1**	***SM2320 B**	**5/17/13 14:45**	**JAB**	**P3E0386**
Carbonate Alkalinity	BRL	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0387
Bicarbonate Alkalinity	**35**	**mg/L**	**5.0**	**0.59**	**1**	***SM2320 B**	**5/17/13 14:45**	**JAB**	**P3E0388**

Duke Energy Corporation
Attn: Jay Perkins
13339 Hagers Ferry Road
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)
Absorber 2
Project No.: J13050177
Sample Matrix: Water

Client Sample ID: 2013010516/2A Abs. Primary Cla
Prism Sample ID: 3050229-02
Prism Work Order: 3050229
Time Collected: 05/08/13 05:35
Time Submitted: 05/09/13 14:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
pH	**6.5 HT**	**pH Units**			**1**	***SM4500-H B**	**5/10/13 15:30**	**JAB**	**P3E0210**
Total Alkalinity	**92**	**mg/L**	**5.0**	**0.59**	**1**	***SM2320 B**	**5/17/13 14:45**	**JAB**	**P3E0386**
Carbonate Alkalinity	BRL	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0387
Bicarbonate Alkalinity	**92**	**mg/L**	**5.0**	**0.59**	**1**	***SM2320 B**	**5/17/13 14:45**	**JAB**	**P3E0388**

Duke Energy Corporation
Attn: Jay Perkins
13339 Hagers Ferry Road
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)
Absorber 2
Project No.: J13050177
Sample Matrix: Water

Client Sample ID: 2013010518/2B Abs. Primary Cla
Prism Sample ID: 3050229-03
Prism Work Order: 3050229
Time Collected: 05/08/13 05:45
Time Submitted: 05/09/13 14:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
pH	**6.7 HT**	**pH Units**			**1**	***SM4500-H B**	**5/10/13 15:30**	**JAB**	**P3E0210**
Total Alkalinity	**66**	**mg/L**	**5.0**	**0.59**	**1**	***SM2320 B**	**5/17/13 14:45**	**JAB**	**P3E0386**
Carbonate Alkalinity	BRL	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0387
Bicarbonate Alkalinity	**66**	**mg/L**	**5.0**	**0.59**	**1**	***SM2320 B**	**5/17/13 14:45**	**JAB**	**P3E0388**

Duke Energy Corporation
Attn: Jay Perkins
13339 Hagers Ferry Road
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)
Absorber 2
Project No.: J13050177
Sample Matrix: Water

Client Sample ID: 2013010521/#1 Abs. Purge -- Liq
Prism Sample ID: 3050229-04
Prism Work Order: 3050229
Time Collected: 05/08/13 05:20
Time Submitted: 05/09/13 14:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
pH	**7.1 HT**	**pH Units**			**1**	***SM4500-H B**	**5/10/13 15:30**	**JAB**	**P3E0210**
Total Alkalinity	**50**	**mg/L**	**5.0**	**0.59**	**1**	***SM2320 B**	**5/17/13 14:45**	**JAB**	**P3E0386**
Carbonate Alkalinity	BRL	mg/L	5.0	0.59	1	*SM2320 B	5/17/13 14:45	JAB	P3E0387
Bicarbonate Alkalinity	**50**	**mg/L**	**5.0**	**0.59**	**1**	***SM2320 B**	**5/17/13 14:45**	**JAB**	**P3E0388**

Duke Energy Corporation
Attn: Jay Perkins
13339 Hagers Ferry Road
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)
Absorber 2
Project No: J13050177

Prism Work Order: 3050229
Time Submitted: 5/9/2013 2:55:00PM

General Chemistry Parameters - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P3E0210 - NO PREP										
LCS (P3E0210-BS1)				Prepared & Analyzed: 05/10/13						
pH	6.92		pH Units	6.880		101	99-101			
LCS (P3E0210-BS2)				Prepared & Analyzed: 05/10/13						
pH	6.90		pH Units	6.880		100	99-101			
Duplicate (P3E0210-DUP1)	**Source: 3050229-04**			Prepared & Analyzed: 05/10/13						
pH	7.13		pH Units		7.13			0	10	
Batch P3E0386 - NO PREP										
Blank (P3E0386-BLK1)				Prepared & Analyzed: 05/17/13						
Total Alkalinity	BRL	5.0	mg/L							
LCS (P3E0386-BS1)				Prepared & Analyzed: 05/17/13						
Total Alkalinity	253	5.0	mg/L	250.0		101	90-110			
LCS Dup (P3E0386-BSD1)				Prepared & Analyzed: 05/17/13						
Total Alkalinity	251	5.0	mg/L	250.0		100	90-110	0.8	200	
Duplicate (P3E0386-DUP1)	**Source: 3050229-04**			Prepared & Analyzed: 05/17/13						
Total Alkalinity	48.9	5.0	mg/L		49.9			2	20	
Batch P3E0387 - NO PREP										
Blank (P3E0387-BLK1)				Prepared & Analyzed: 05/17/13						
Carbonate Alkalinity	BRL	5.0	mg/L							

Duke Energy Corporation
Attn: Jay Perkins
13339 Hagers Ferry Road
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel 2)
Absorber 2
Project No: J13050177

Prism Work Order: 3050229
Time Submitted: 5/9/2013 2:55:00PM

General Chemistry Parameters - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P3E0387 - NO PREP										
Duplicate (P3E0387-DUP1)		**Source: 3050229-04**		Prepared & Analyzed: 05/17/13						
Carbonate Alkalinity	BRL	5.0	mg/L		BRL				20	
Batch P3E0388 - NO PREP										
Blank (P3E0388-BLK1)				Prepared & Analyzed: 05/17/13						
Bicarbonate Alkalinity	BRL	5.0	mg/L							
LCS (P3E0388-BS1)				Prepared & Analyzed: 05/17/13						
Bicarbonate Alkalinity	253	5.0	mg/L	250.0		101	90-110			
LCS Dup (P3E0388-BSD1)				Prepared & Analyzed: 05/17/13						
Bicarbonate Alkalinity	251	5.0	mg/L	250.0		100	90-110	0.8	200	
Duplicate (P3E0388-DUP1)		**Source: 3050229-04**		Prepared & Analyzed: 05/17/13						
Bicarbonate Alkalinity	48.9	5.0	mg/L		49.9			2	20	

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

DUKE ENERGY®

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

LIMS # J13050177 | Sample Class ASHBAS | Samples Originating From NC ___ SC ___
Logged By SA | Date & Time 5/9/13 | SAMPLE PROGRAM Ground Water ___ NPDES ___ Drinking Water ___ UST ___ RCRA ___ Waste ___
Cooler Temp (C) 1.7

[19]Page 1 of 1
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

[1]Project Name: Belews CreeK (Flex Fuel Absorber 2)		[2]Phone No:
[2] Client: Wayne Chapman, Bill Kennedy		[4]Fax No:
[5]Business Unit:	[6]Process: BMCEFGD	Mail Code:
[8]Oper. Unit: BC00	[9]Res. Type:	[10]Activity ID:

PRISM
PO#144725

SGS – Denver
PO# 148676

AS&C
PO#133241

[15]Preserv. 1=HCL 2=H2SO4 3=HNO3 =None

[16]Analyses Required — *appropriate non-shaded areas.*

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	Metals* and Hg 245.1	Anions**	Solids =% inerts, Hg-metals_ven, (V_SGS)	TDS	Se Specifcation (ASC)	Hg 200.8 - ((V-ASC)	TSS	CO3, HCO3 alk_other (Prism)	Lab, return kit to Wayne Chapman ___	
2013010513		Make Up Water	5-8-13	0600	W. CHAPMAN			1*	1		1		1	1	1		#1
2013010514		Reagent Feed Tank " " -- Liquid	5-8-13	0530	W. CHAPMAN			1	1								2
2013010515		Reagent Feed Tank " " -- Solids	5-8-13	0530	W. CHAPMAN			1*	1*	1						2 Bags	3
2013010516		2A Abs. Primary Class Feed -- Liquid	5-8-13	0535	W. CHAPMAN			1	1		1	1			1		5 #2
2013010517		2A Abs. Primary Class Feed -- Solids	5-8-13	0535	W. CHAPMAN			1*	1*	1						2 Bags	3
2013010518		2B Abs. Primary Class Feed -- Liquid	5-8-13	0545	W. CHAPMAN			1	1		1	1			1		5 #3
2013010519		2B Abs. Primary Class Feed -- Solids	5-8-13	0545	W. CHAPMAN			1*	1*	1						2 Bags	3
2013010520		Gypsum Cake -- " " Belt	5-8-13	0500	W. CHAPMAN			1*	1*	1							2
2013010521		#1 Abs. Purge-- Liquid	5-8-13	0520	W. CHAPMAN			1	1		1	1		1	1		5 #4
2013010522		#1 Abs. Purge - Solids	~~5-8-13~~ 5-8-13	0520	W. CHAPMAN			1*	1*	1						2 Bags	3

Customer to complete appropriate columns to right

Customer to sign & date below - fill out from left to right.

1) Relinquished By: [signature]	Date/Time: 5-8-13 1930	2) Accepted By: COURIER	Date/Time: 5/8/13
3) Relinquished By: COURIER	Date/Time: 5/9/13 0930	4) Accepted By: [signature]	Date/Time: 5/9/13 0930
5) Relinquished By: [signature]	Date/Time: 5-9-13 1415	6) Accepted By: [signature]	Date/Time: 5-9-13 1415
7) Relinquished By: [signature]	Date/Time: 5/9/13 1300	8) Accepted By:	Date/Time:
9) Seal/Locked By: [signature]	Date/Time: 5/9/13 1300	10) Seal/Lock Opened By	Date/Time:
11) ~~Seal/Locked By~~ Relinquished by [signature]	Date/Time: 5-9-13 1455	12) Seal/Lock Opened By: [signature]	Date/Time: 5-9-13 @ 1455

Comments:

Metals* Water (ICP/TRM=B, Ca, Fe, Mg, Mn ,K, Na, Sr IMS/TRM=Sb, Al, As, Be, Cd, Cr, Co, Ni, Pb, Se, and 1* No Hg 245.1)
Anions** Water (IC=Br, Cl, F, SO4) 1*-solids ICPSED=Al,Sb,As,Be,B,Ca,Cd,Cr,Cu,Co,Fe,K,Mg,Mn,Ni,Pb,Se,Sr)
1* (% Solgypsum and Dion_GYP for Br, Cl, F, SO4

Customer, IMPORTANT! Please indicate desired turnaround.

[22]Requested Turnaround
21 Days ___x___9In-house)
*7 Days ___
·48 Hr ___
Vendor lab 13 Days___X___
5-22-13

4.8°C

3650229

APPLIED SPECIATION
AND CONSULTING, LLC

18804 Northcreek Parkway Bothell, WA, 98011
Tel: (425) 483-3300 Fax: (425) 483-9818
www.appliedspeciation.com

May 20, 2013

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078
(704) 875-5245

Project: Belews CreeK (Flex Fuel Absorber 2) (LIMS #J13050177)

Mr. Perkins,

Attached is the report associated with four (4) aqueous samples submitted for total mercury and selenium speciation analysis on May 9, 2013. The samples were received in a sealed cooler at -0.4°C on May 10, 2013. Selenium speciation analysis was performed via ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS). Mercury quantitation was performed via cold vapor inductively coupled plasma mass spectrometry (CV-ICP-MS). Any issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report prepared for:

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078

Project: Belews CreeK (Flex Fuel Absorber 2) (LIMS #J13050177)

May 20, 2013

1. Sample Reception

Three (3) aqueous samples in 125mL HDPE bottles (provided by Applied Speciation and Consulting) were submitted for selenium speciation analysis on May 9, 2013. One (1) additional sample in a 40ml borosilicate glass bottle (provided by Applied Speciation and Consulting) was submitted for total mercury quantitation. All samples were received on May 10, 2013 in a sealed container at -0.4°C.

All samples were received in a laminar flow clean hood, void of trace metals contamination and ultra-violet radiation, and were designated discrete sample identifiers. The 40mL borosilicate glass vial submitted for total mercury was preserved with bromine monochloride (BrCl) solution. The resulting sample was stored in a secure polyethylene container, known to be free from trace metals contamination, until the analyses could be performed.

An aliquot of each sample requiring selenium speciation evaluation was filtered (0.45µm) and each filtrate was stored in a secure, monitored cryofreezer (maintained at a temperature of -80°C) until selenium speciation analysis could be performed via ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS).

2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Total Mercury Quantitation by CV-ICP-MS All samples and preparation blanks for total mercury quantitation were preserved with 2% (v/v) BrCl. The resulting samples were analyzed for mercury via cold vapor inductively coupled plasma mass spectrometry (CV-ICP-MS).

Selenium Speciation Analysis by IC-ICP-CRC-MS Prior to analysis, an aliquot of each sample was filtered with a syringe filter (0.45µm) and injected directly into a sealed autosampler vial. No further sample preparation was performed as any chemical alteration of a sample may shift the equilibrium of the system, resulting in changes in speciation ratios.

3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimum interval of every ten analytical runs.

Total Mercury Quantitation by CV-ICP-MS The sample fractions for total mercury quantitation were analyzed by cold vapor inductively coupled plasma mass spectrometry (CV-ICP-MS) on May 14, 2013. Aliquots of each sample are reacted with a reductant in-line and transported to a gas-liquid separator. The volatile elemental mercury that is formed is then swept by a stream of argon gas into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and separated on the basis of their mass-to-charge ratio (m/z) by a mass spectrometer. A solid-state detector detects ions transmitted through the mass analyzer and the resulting current is processed by a data handling system.

Selenium Speciation Analysis by IC-ICP-CRC-MS Each sample for selenium speciation analysis was analyzed by ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS) on May 15, 2013. An aliquot of each sample is injected onto an anion exchange column and mobilized by a basic (pH > 7) gradient. The eluting selenium species are then introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (CRC) containing a reaction gas which preferentially reacts with interfering ions of the same target mass to charge ratios (m/z). A solid-state detector detects ions transmitted through the mass analyzer and the resulting current is processed by a data handling system.

Retention times for each eluting species are compared to known standards for species identification.

4. Analytical Issues

The overall analyses went well and no significant analytical issues were encountered. All quality control parameters associated with these samples were within acceptance limits.

The selenate result for the first 0.01 ug/L low standard was determined to be a statistical outlier upon application of the Grubbs test. The value for this sample was omitted from calculations used to determine the eMDL associated with selenate results.

The estimated method detection limits (eMDLs) for selenite, selenate, and selenocyanate are generated from replicate analyses of the lowest standard in the calibration curve. Not all selenium species are present in preparation blanks; therefore, eMDL calculations based on preparation blanks are artificially biased low.

The eMDL for methylseleninic acid and selenomethionine is calculated from the average eMDL of selenite, selenate, and selenocyanate. The calibration does not contain methylseleninic acid or selenomethionine due to impurities in these standards which would bias the results for other selenium species.

The eMDL for mercury has been calculated using the standard deviation of the preparation blanks preserved and analyzed concurrently with the submitted samples.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Total Mercury & Selenium Speciation Results for Duke Energy
Project Name: Belews CreeK (Flex Fuel Absorber 2)
Contact: Jay Perkins
LIMS #J13050177

Date: May 20, 2013
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Total Hg	Se(IV)	Se(VI)	SeCN	MeSe(IV)	SeMe	Unknown Se Species (n)
Make Up Water	ND (< 0.0036)	NR	NR	NR	NR	NR	NR
2A Abs. Primary Class Feed -- Liquid	NR	432	55.8	ND (< 1.1)	ND (< 1.6)	ND (< 1.6)	0.0 (0)
2B Abs. Primary Class Feed -- Liquid	NR	317	51.2	ND (< 1.1)	ND (< 1.6)	ND (< 1.6)	0.0 (0)
#1 Abs. Purge-- Liquid	NR	213	54.0	ND (< 1.1)	ND (< 1.6)	ND (< 1.6)	0.0 (0)

All results reflect the applied dilution and are reported in µg/L
NR = Analysis not requested
ND = Not detected at the applied dilution
SeCN = Selenocyanate
MeSe(IV) = Methylseleninic acid
SeMe = Selenomethionine
Unknown Se Species = Total concentration of all unknown Se species observed by IC-ICP-MS
n = number of unknown Se species observed

Total Mercury & Selenium Speciation Results for Duke Energy
Project Name: Belews CreeK (Flex Fuel Absorber 2)
Contact: Jay Perkins
LIMS #J13050177

Date: May 20, 2013
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Quality Control Summary - Preparation Blank Summary

Analyte (µg/L)	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL*	eMDL 5x	eMDL 1000x
Hg	-0.0024	0.0002	-0.0004	0.0000	-0.0007	0.0012	0.0007	0.0036	-
Se(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.003	-	2.7
Se(VI)	0.000	0.000	0.000	0.000	0.000	0.000	0.001	-	1.1
SeCN	0.000	0.000	0.000	0.000	0.000	0.000	0.001	-	1.1
MeSe(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.002	-	1.6
SeMe	0.000	0.000	0.000	0.000	0.000	0.000	0.002	-	1.6

eMDL = Estimated Method Detection Limit

*Please see narrative regarding eMDL calculations

Quality Control Summary - Certified Reference Materials

Analyte (µg/L)	CRM	True Value	Result	Recovery
Hg	NIST 1641d	1568	1464	93.3
Se(IV)	LCS	4.79	4.728	98.8
Se(VI)	LCS	4.74	4.677	98.7
SeCN	LCS	4.46	4.588	102.9
MeSe(IV)	LCS	3.24	2.926	90.4
SeMe	LCS	4.66	4.344	93.2

Total Mercury & Selenium Speciation Results for Duke Energy
Project Name: Belews CreeK (Flex Fuel Absorber 2)
Contact: Jay Perkins
LIMS #J13050177

Date: May 20, 2013
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Quality Control Summary - Matrix Duplicates

Analyte (µg/L)	Sample ID	Rep 1	Rep 2	Mean	RPD
Hg	Batch QC	0.0100	0.0098	0.0099	2.0
Se(IV)	Batch QC	ND (< 2.7)	ND (< 2.7)	NC	NC
Se(VI)	Batch QC	ND (< 1.1)	ND (< 1.1)	NC	NC
SeCN	Batch QC	ND (< 1.1)	ND (< 1.1)	NC	NC
MeSe(IV)	Batch QC	ND (< 1.6)	ND (< 1.6)	NC	NC
SeMe	Batch QC	ND (< 1.6)	ND (< 1.6)	NC	NC

ND = Not detected at the applied dilution
NC = Value was not calculated due to one or more concentrations below the eMDL

Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate

Analyte (µg/L)	Sample ID	Spike Conc	MS Result	Recovery	Spike Conc	MSD Result	Recovery	RPD
Hg	Batch QC	2.000	2.078	103.4	2.000	2.105	104.8	1.3
Se(IV)	Batch QC	5560	5828	104.8	5560	5702	102.5	2.2
Se(VI)	Batch QC	5045	4825	95.6	5045	4803	95.2	0.5
SeCN	Batch QC	4575	3985	87.1	4575	4023	87.9	1.0

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Page 1 of 2

DUKE ENERGY

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only
LIMS # J13050177 | Sample Class ASHBAS | Samples Originating From NC___ SC___
Logged By SA | Date & Time 5/9/13
SAMPLE PROGRAM ___ Ground Water ___ NPDES ___ Drinking Water ___ UST ___ RCRA ___ Waste ___
Cooler Temp (C) 1.7

[19]Page 1 of 1
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

1)Project Name: Belews CreeK (Flex Fuel Absorber 2) | 2)Phone No:
2) Client: Wayne Chapman, Bill Kennedy | 4)Fax No:
5)Business Unit: | 6)Process: BMCEFGD | Mail Code:
8)Oper. Unit: BC00 | 9)Res. Type: | 10)Activity ID:

PRISM
PO#144725

SGS – Denver
PO# 148676

AS&C
PO#133241

[15]Preserv.:1=HCl 2=H2SO4 3=HNO3 =None

[16]Analyses Required — appropriate non-shaded areas.

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	Metals* and Hg 245.1	Anions**	Solids =% inerts, Hg-metals_ven, (V_SGS)	TDS	Se Specifcation (ASC)	Hg 200.8 - ((V-ASC)	TSS	CO3, HCO3 alk_other (Prism)	Lab, return kit to Wayne Chapman ___	
								3	4	4	4	4	5		4		
2013010513		Make Up Water	5-8-13	0600	W. CHAPMAN			1*	1		1		1	1	1		
2013010514		Reagent Feed Tank " " -- Liquid	5-8-13	0530	W. CHAPMAN			1	1								2
2013010515		Reagent Feed Tank " " -- Solids	5-8-13	0530	W. CHAPMAN			1*	1*	1						2 Bags	3
2013010516		2A Abs. Primary Class Feed -- Liquid	5-8-13	0535	W. CHAPMAN			1	1		1	1			1		5
2013010517		2A Abs. Primary Class Feed -- Solids	5-8-13	0535	W. CHAPMAN			1*	1*	1						2 Bags	3
2013010518		2B Abs. Primary Class Feed -- Liquid	5-8-13	0545	W. CHAPMAN			1	1		1	1			1		5
2013010519		2B Abs. Primary Class Feed -- Solids	5-8-13	0545	W. CHAPMAN			1*	1*	1						2 Bags	3
2013010520		Gypsum Cake -- " " Belt	5-8-13	0500	W. CHAPMAN			1*	1*	1							2
2013010521		#1 Abs. Purge-- Liquid	5-8-13	0520	W. CHAPMAN			1	1		1	1		1	1		5
2013010522		#1 Abs. Purge - Solids	5-8-13	0520	W. CHAPMAN			1*	1*	1						2 Bags	3

Customer to complete appropriate columns to right.

Customer to sign & date below - fill out from left to right.

	Date/Time		Date/Time
1) Relinquished By	5-8-13 1430	2) Accepted By: COURIER	5/8/13
3) Relinquished By: COURIER	5/9/13 0930	4) Accepted By:	5/9/13 0930
5)Relinquished By		6)Accepted By: Nancy Culbrian Temp=0.4°C	5/10/13 10:00
7)Relinquished By	5/9/13 1300	8)Accepted By:	
9)Seal/Locked By	5/9/13 1300	10) Seal/Lock Opened By	
11)Seal/Locked By		12)Seal/Lock Opened By	

Customer, IMPORTANT!: Please indicate desired turnaround.

[22]Requested Turnaround
21 Days ____x____9In-house)
*7 Days _____
*48 Hr _____
Vendor lab 13 Days___X___
5-22-13

Comments
Metals* Water (ICP/TRM=B, Ca, Fe, Mg, Mn ,K, Na, Sr IMS/TRM=Sb, Al, As, Be, Cd, Cr, Co, Ni, Pb, Se, and 1* No Hg 245.1)
Anions** Water (IC=Br, Cl, F, SO4) 1*-solids ICPSED=Al,Sb,As,Be,B,Ca,Cd,Cr,Cu,Co,Fe,K,Mg,Mn,Ni,Pb,Se,Sr)
1* (% Solgypsum and Dion_GYP for Br, Cl, F, SO4

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

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13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

LIMS # J1305017 7 | Sample Class ASHBAS | Samples Originating From NC___ SC___
Logged By RA | Date & Time 5/9/13 | SAMPLE PROGRAM Ground Water ___ NPDES ___ Drinking Water ___ UST ___ RCRA ___ Waste ___
Cooler Temp (C) 1.7

[19]Page 1 of 1
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

PRISM PO#144725
SGS – Denver PO# 148676
AS&C PO#133241

Customer must Complete

1)Project Name: Belews CreeK (Flex Fuel Absorber 2) | 2)Phone No:
2) Client: Wayne Chapman, Bill Kennedy | 4)Fax No:
5)Business Unit: | 6)Process: BMCEFGD | Mail Code:
8)Oper. Unit: BC00 | 9)Res. Type: | 10)Activity ID:

[15]Preserv.:1=HCL 2=H2SO4 3=HNO3 =None

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	Metals* and Hg 245.1 (3)	Anions** (4)	Solids =% inerts, Hg-metals_ven, (V_SGS) (4)	TDS (4)	Se Specifcation (ASC) (4)	Hg 200.8 - ((V-ASC) (5)	TSS	CO3, HCO3 alk_other (Prism) (4)	Lab, return kit to Wayne Chapman ___
2013010513		Make Up Water	5-8-13	0600	W. CHAPMAN			1*	1		1		1	1	1	
2013010514		Reagent Feed Tank " " -- Liquid	5-8-13	0530	W. CHAPMAN			1	1							2
2013010515		Reagent Feed Tank " " -- Solids	5-8-13	0530	W. CHAPMAN			1*	1*	1						2 Bags 3
2013010516		2A Abs. Primary Class Feed -- Liquid	5-8-13	0535	W. CHAPMAN			1	1		1	1			1	5
2013010517		2A Abs. Primary Class Feed -- Solids	5-8-13	0535	W. CHAPMAN			1*	1*	1						2 Bags 3
2013010518		2B Abs. Primary Class Feed -- Liquid	5-8-13	0545	W. CHAPMAN			1	1		1	1			1	5
2013010519		2B Abs. Primary Class Feed -- Solids	5-8-13	0545	W. CHAPMAN			1*	1*	1						2 Bags 3
2013010520		Gypsum Cake -- " " Belt	5-8-13	0500	W. CHAPMAN			1*	1*	1						2
2013010521		#1 Abs. Purge-- Liquid	5-8-13	0520	W. CHAPMAN			1	1		1	1		1	1	5
2013010522		#1 Abs. Purge - Solids	5-8-13	0520	W. CHAPMAN			1*	1*	1						2 Bags 3

Customer to complete appropriate columns to right

Customer to sign & date below - fill out from left to right.

[16]Analyses Required — appropriate non-shaded areas.

1) Relinquished By: W. Chapman	Date/Time: 5-8-13 1430	2) Accepted By: COURIER	Date/Time: 5/8/13
3) Relinquished By: COURIER	Date/Time: 5/9/13 0930	4) Accepted By: [signature]	Date/Time: 5/9/13 0930
5)Relinquished By	Date/Time	6)Accepted By:	Date/Time
7)Relinquished By: [signature]	Date/Time: 5/9/13 1300	8)Accepted By:	Date/Time
9)Seal/Locked By: [signature]	Date/Time: 5/9/13 1300	10) Seal/Lock Opened By	Date/Time
11)Seal/Locked By	Date/Time	12)Seal/Lock Opened By	Date/Time

Customer, IMPORTANT! Please indicate desired turnaround.

[22]Requested Turnaround
21 Days ___x___9In-house)
*7 Days _____
*48 Hr _____
Vendor lab 13 Days___X___
5-22-13

Comments
Metals* Water (ICP/TRM=B, Ca, Fe, Mg, Mn ,K, Na, Sr IMS/TRM=Sb, Al, As, Be, Cd, Cr, Co, Ni, Pb, Se, and 1* No Hg 245.1)
Anions** Water (IC=Br, Cl, F, SO4) 1*-solids ICPSED=Al,Sb,As,Be,B,Ca,Cd,Cr,Cu,Co,Fe,K,Mg,Mn,Ni,Pb,Se,Sr)
1* (% Solgypsum and Dion_GYP for Br, Cl, F, SO4